

## IN THE SPECIFICATION

Page 3, please amend the paragraph beginning at line 2 as follows.

By the RIE method used in step F of Figure 8, a chemical reaction occurs between radicals generated from the reactive gas and ZnSe on the substrate surface, generating bi by-products. These bi by-products are then removed by sputtering. Thus the etching progresses.

Page 3, please amend the paragraph beginning at line 15 as follows.

When the hydrocarbon-based gas is used, the gas reacts with the ZnSe at the substrate surface and generates bi by-products of metal-organic compounds such as dimethylzinc, dimethylselenide and the like. They have a high vapor pressure and a strong tendency to desorb from the substrate surface simultaneously with the generation. And the ratio to be removed by sputtering is small. Namely, the etching rate greatly depends on the reaction between the radicals and ZnSe on the substrate surface.

Page 5, please amend the paragraph beginning at line 16 as follows.

Referring to Figures 1(A) and (B), when reactive ion etching is performed on the ZnSe polycrystalline substrate 1 by means of chlorine-based gas such as BC<sub>1</sub><sub>3</sub> or the like, first, bi by-products 7 such as ZnCl<sub>2</sub>, SE<sub>2</sub>Cl<sub>2</sub>, SeCl<sub>4</sub>, and the like, which are low in vapor pressure, are generated. Since these chlorides are low in vapor pressure, they do not desorb immediately but move around the surface of the ZnSe polycrystalline substrate 1 and are uniformly distributed. (See Figs. 1(B) and (C).)

Page 5, please amend the paragraph beginning at line 23 as follows.

Then, referring to Figures 1(D) and (E), sputtering ions (positive ions) remove the ~~bi~~ by-products 7 and a new surface of the ZnSe polycrystalline substrate 1 appears.

Page 6, please amend the paragraph beginning at line 10 as follows.

In addition, if the reactive ion etching is performed at a gas pressure of 0.5Pa through 1Pa, removal of the ~~bi~~ by-products within the surface is unified and the uniformity of the etching speed within the substrate surface is enhanced.

Page 8, please amend the paragraph beginning at line 3 as follows.

It can be considered that a smoothly etched surface can be obtained due to a low vapor pressure of ~~bi~~ by-products which are presumed to be generated by the BC<sub>13</sub> gas. In terms of the boiling point of each product, the boiling point of ZnCl<sub>2</sub> is 753°C, Se<sub>2</sub>Cl<sub>2</sub>, 130°C, and SeCl<sub>4</sub>, 305°C. On the other hand, the boiling point of (CH<sub>3</sub>)<sub>2</sub>Zn is 44°C, and (CH<sub>3</sub>)<sub>2</sub>Se, 55°C, which are ~~bi~~ by-products presumed to be generated when etching is performed using methane gas.